

APPENDIX A

MANURE CONTROL ALTERNATIVES FOR OPEN FEEDLOTS

Introduction: Water pollution control requirements for animal feeding operations are given in Chapter 65 of the rules of the Iowa department of natural resources. Under these rules, open feedlots meeting the operation permit application requirements of rule 567—65.4(455B) must also comply with the minimum manure control requirements of subrule 65.2(2). Subrule 65.2(2) requires that all feedlot runoff and other manure flows resulting from precipitation events less than or equal to the 25-year, 24-hour rainfall event be collected and land applied.

This appendix describes five feedlot runoff control systems that meet the requirements of subrule 65.2(2). The systems differ in the volume of manure storage provided and in the frequency of manure application. In general, the time interval between required applications increases with increased storage volume.

A feedlot operator who constructs and operates a manure control facility in accordance with the requirements of any of these five systems will not have additional manure control requirements imposed, unless manure discharges from the facility cause state water quality standards violations. In describing the five systems, the major features of each are first reviewed, followed by detailed information on the construction and operation requirements of the system. The system descriptions are presented in this appendix as follows:

	System	Pages
System 1:	One Manure Application Period Per Year	33-35
System 2:	July and November Manure Application	35-37
System 3:	April, July, and November Manure Application	37-39
System 4:	Application After Each Significant Precipitation Event	39-41
System 5:	April/May and October/November Manure Application	41-43
Figures 1-4		44-45

SYSTEM 1: ONE MANURE APPLICATION PERIOD PER YEAR

MAJOR SYSTEM FEATURES:

- Adequate capacity must be provided to collect and store the average annual runoff from all feedlot and nonfeedlot areas which drain into the manure control system (additional storage is required if process waters or manure from other sources also drain into the control system).
- Collected manure must be removed from the control system and land applied at least once annually (interval between successive applications cannot exceed 12 months).

DETAILED SYSTEM REQUIREMENTS:

Manure Control System: The manure control system must be constructed to meet or exceed the following requirements:

1. **Solids Settling Facilities:** Manure solids settling facilities which meet or exceed the requirements of subrule 65.2(1) must precede the feedlot runoff control system.
2. **Feedlot Runoff Control System:** The feedlot runoff control system shall, as a minimum, have adequate capacity to store the total wastewater volume determined by summing the following:
 - A. The volume determined by multiplying the unpaved feedlot area which drains into the control system by the appropriate runoff value from Figure 1.
 - B. The volume determined by multiplying the paved feedlot area which drains into the control system by 1.5 times the appropriate runoff value from Figure 1.
 - C. The volume determined by multiplying the total area of cropland, pasture and woodland draining into the control system by the greater of the following:
 - The amount of runoff expected from these areas as a result of the 25-year, 24-hour precipitation event.*
 - The average annual runoff expected from these areas.*
 - D. The volume determined by multiplying the total roof, farmstead, and driveway area draining into the control system by the average annual runoff expected from these areas.*
 - E. The volume of process wastewater which drains into the control system during a 12-month period.
 - F. The volume of manure from other sources which discharges into the control system during a 12-month period.

*Expected 25-year, 24-hour and average annual runoff values shall be determined using runoff prediction methodologies of the U.S. Soil Conservation Service (or equivalent methodologies).

Manure Application Requirements: Manure must be removed from the manure control system and land applied in accordance with the following requirements:

1. **Solids Settling Facilities:** Collected solids must be removed from the solids settling facilities as necessary to maintain adequate capacity to handle future runoff events. As a minimum, solids shall be removed at least once annually.
2. **Feedlot Runoff Control System:** Accumulated manure shall be removed from the feedlot runoff control system and disposed of by land application at least once annually. The interval between successive application periods shall not exceed 12 months.

During application periods, land application shall be conducted at rates sufficient to ensure complete removal of accumulated manure from the runoff control system in ten or fewer application days. Manure removal is considered complete when the manure remaining in the runoff control system occupies less than 10 percent of the system's design manure storage volume.

Land application of manure shall be conducted on days when weather and soil conditions are suitable. Weather and soil conditions are normally considered suitable for manure application if:

- Land application areas are not frozen or snow-covered.
- Temperatures during application are greater than 32 degrees Fahrenheit.
- Precipitation has not exceeded 0.05 inch per day for each of the three days immediately preceding application and no precipitation is occurring on the day of application.

SYSTEM 2: JULY AND NOVEMBER MANURE APPLICATION

MAJOR SYSTEM FEATURES:

- Adequate capacity must be provided to collect and store the average runoff expected to occur over the eight-month period from December 1 through July 31 from all feedlot and nonfeedlot areas which drain into the manure control system (additional storage is required if process waters or manure from other sources also drain into the control system).
- Collected manure may be removed from the control system and land applied during any period of the year that conditions are suitable. While application during other periods will minimize the need for July and November application, sufficient manure must still be disposed of during July and November to reduce the volume of manure remaining in the control system during these months to less than 10 percent of the system's design manure storage volume.

DETAILED SYSTEM REQUIREMENTS:

Manure Control System: The manure control system must be constructed to meet or exceed the following requirements:

1. **Solids Settling Facilities:** Manure solids settling facilities which meet or exceed the requirements of subrule 65.2(1) must precede the feedlot runoff control system.
2. **Feedlot Runoff Control System:** The feedlot runoff control system shall, as a minimum, have adequate capacity to store the total wastewater volume determined by summing the following:
 - A. The volume determined by multiplying the unpaved feedlot area which drains into the control system by the appropriate runoff value from Figure 2.
 - B. The volume determined by multiplying the paved feedlot area which drains into the control system by 1.5 times the appropriate runoff value from Figure 2.

C. The volume determined by multiplying the total area of cropland, pasture and woodland draining into the control system by the greater of the following:

- The amount of runoff expected from these areas as a result of the 25-year, 24-hour precipitation event.*
- The average runoff expected to occur from these areas during the eight-month period from December 1 to July 31.*

D. The volume determined by multiplying the total roof, farmstead and driveway area draining into the control system by the average runoff expected to occur from these areas during the eight-month period from December 1 to July 31.*

E. The volume of process wastewater which drains into the control system during the eight-month period from December 1 through July 31.

F. The volume of manure from other sources which discharges into the control system during the eight-month period from December 1 through July 31.

*Expected 25-year, 24-hour runoff and average runoff for the eight-month period December 1 through July 31 shall be determined using runoff prediction methodologies of the U.S. Soil Conservation Service (or equivalent methodologies).

Manure Application Requirements: Manure must be removed from the manure control system and land applied in accordance with the following requirements:

1. **Solids Settling Facilities:** Collected solids must be removed from the solids settling facilities as necessary to maintain adequate capacity to handle future runoff events. As a minimum, solids shall be removed at least once annually.
2. **Feedlot Runoff Control System:**

A. A feedlot operator must comply with the following manure application requirements if application operations are limited to the months of July and November.

During these months, land application shall be conducted at rates sufficient to ensure complete removal of accumulated manure from the runoff control system in ten or fewer application days. Manure removal is considered complete when the manure remaining in the runoff control system occupies less than 10 percent of the system's design manure storage capacity.

During July and November, manure application operations shall be initiated on the first day that conditions are suitable for land application of manure, and application must continue on subsequent days that suitable conditions exist. If unfavorable weather conditions prevent complete application of manure to be accomplished during July or November, application must be continued into the following month. Manure application operations may cease when complete application has been achieved.

Weather and soil conditions are normally considered suitable for land application of manure if:

- Land application areas are not frozen or snow-covered.
- Temperatures during application are greater than 32 degrees Fahrenheit.
- Precipitation has not exceeded 0.05 inch per day for each of the three days immediately preceding application and no precipitation is occurring on the day of application.

B. A feedlot operator may dispose of accumulated manure during any period of the year that conditions are suitable. While application during other periods will minimize the need for application during July and November, the feedlot operator will still need to dispose of sufficient manure during July and November to reduce the manure volume remaining in the runoff control system during these months to less than 10 percent of the system's design manure storage capacity.

A feedlot operator who does not limit manure application operations to the months of July and November is not required to comply with the specific manure application requirements which apply when application is limited to those months. However, this does not relieve the feedlot operator of the responsibility to conduct application operations at rates and times which are sufficient to ensure that the manure volume remaining in the runoff control system during July and November will be reduced to less than 10 percent of the system's design manure storage capacity.

SYSTEM 3: APRIL, JULY AND NOVEMBER MANURE APPLICATION

MAJOR SYSTEM FEATURES:

- Adequate capacity must be provided to collect and store the average runoff expected to occur during the five-month period from December 1 through April 30 from all feedlot and nonfeedlot areas which drain into the manure control system (additional storage is required if process waters or manure from other sources also drain into the control system).
- Collected manure may be removed from the control system and land applied during any period of the year that conditions are suitable. While application during other periods will minimize the need for application during the specified application months, sufficient manure must still be disposed of during April, July and November to reduce the volume of manure remaining in the control system during these months to less than 10 percent of the system's design manure storage volume.

DETAILED SYSTEM REQUIREMENTS:

Manure Control System: The manure control system must be constructed to meet or exceed the following requirements:

1. **Solids Settling Facilities:** Manure solids settling facilities which meet or exceed the requirements of subrule 65.2(1) must precede the feedlot runoff control system.

2. Feedlot Runoff Control System: The feedlot runoff control system shall, as a minimum, have adequate capacity to store the total wastewater volume determined by summing the following:

A. The volume determined by multiplying the unpaved feedlot area which drains into the control system by the appropriate runoff value from Figure 3.

B. The volume determined by multiplying the paved feedlot area which drains into the control system by 1.5 times the appropriate runoff value from Figure 3.

C. The volume determined by multiplying the total area of cropland, pasture and woodland draining into the control system by the greater of the following:

- The amount of runoff expected from these areas as a result of the 25-year, 24-hour precipitation event.*

- The average annual runoff expected to occur from these areas during the five-month period from December 1 to April 30.*

D. The volume determined by multiplying the total roof, farmstead, and driveway area draining into the control system by the average runoff expected to occur from these areas during the five-month period from December 1 to April 30.*

E. The volume of process wastewater which drains into the control system during the five-month period from December 1 through April 30.

F. The volume of manure from other sources which discharges into the control system during the five-month period from December 1 through April 30.

*Expected 25-year, 24-hour runoff and average runoff for the five-month period December 1 through April 30 shall be determined using runoff prediction methodologies of the U.S. Soil Conservation Service (or equivalent methodologies).

Manure Application Requirements: Manure must be removed from the manure control system and land applied in accordance with the following requirements:

1. Solids Settling Facilities: Collected solids must be removed from the solids settling facilities as necessary to maintain adequate capacity to handle future runoff events. As a minimum, solids shall be removed at least once annually.

2. Feedlot Runoff Control System:

A. A feedlot operator must comply with the following manure application requirements if application operations are limited to the months of April, July and November.

During these months, land application shall be conducted at rates sufficient to ensure complete removal of accumulated manure from the runoff control system in ten or fewer application days. Manure removal is considered complete when the manure remaining in the runoff control system occupies less than 10 percent of the system's design manure storage capacity.

During April, July and November, manure application operations shall be initiated on the first day that conditions are suitable for land application of manure, and application must continue on subsequent days that suitable conditions exist. If unfavorable weather conditions prevent complete application of manure to be accomplished during any of these months, manure application must be continued into the following month. Manure application operations may cease when complete application has been achieved.

Weather and soil conditions are normally considered suitable for land application of manure if:

- Land application areas are not frozen or snow-covered.
- Temperatures during application are greater than 32 degrees Fahrenheit.
- Precipitation has not exceeded 0.05 inch per day for each of the three days immediately preceding application and no precipitation is occurring on the day of application.

B. A feedlot operator may dispose of accumulated manure during any period of the year that conditions are suitable. While application during other periods will minimize the need for application during April, July and November, the feedlot operator will still need to dispose of sufficient manure during July and November to reduce the manure volume remaining in the runoff control system during these months to less than 10 percent of the system's design manure storage capacity.

A feedlot operator who does not limit manure application operations to the months of April, July and November is not required to comply with the specific manure application requirements which apply when application is limited to those months. However, this does not relieve the feedlot operator of the responsibility to conduct application operations at rates and times which are sufficient to ensure that the manure volume remaining in the runoff control system during April, July and November will be reduced to less than 10 percent of the system's design manure storage capacity.

SYSTEM 4: APPLICATION AFTER EACH SIGNIFICANT PRECIPITATION EVENT

MAJOR SYSTEM FEATURES:

- Adequate capacity must be provided to collect and store the runoff expected to occur as a result of the 25-year, 24-hour precipitation event from all feedlot and nonfeedlot areas which drain into the manure control system (additional storage is required if process waters or manure from other sources also drain into the control system).
- Collected manure must be removed from the control system and land applied whenever the available (unoccupied) storage capacity remaining in the control system is less than 90 percent of that needed to store runoff from the 25-year, 24-hour storm-land application must begin on the first day that conditions are suitable and must continue until application is completed.

DETAILED SYSTEM REQUIREMENTS:

Manure Control System: The manure control system must be constructed to meet or exceed the following requirements:

1. **Solids Settling Facilities:** Manure solids settling facilities which meet or exceed the requirements of subrule 65.2(1) must precede the feedlot runoff control system.
2. **Feedlot Runoff Control System:** The feedlot runoff control system shall, as a minimum, have adequate capacity to store the total wastewater volume determined by summing the following:
 - A. The volume determined by multiplying the total feedlot area which drains into the control system by the amount of runoff expected to occur from this area as a result of the 25-year, 24-hour precipitation event.*
 - B. The volume determined by multiplying the total area of cropland, pasture and woodland draining into the control system by the amount of runoff expected to occur from these areas as a result of the 25-year, 24-hour precipitation event.*
 - C. The volume determined by multiplying the total roof, farmstead and driveway area draining into the control system by the amount of runoff expected to occur from these areas as a result of the 25-year, 24-hour precipitation event.*
 - D. The volume of process wastewater which drains into the control system during the five-month period from December 1 through April 30.
 - E. The volume of manure from other sources which discharges into the control system during the five-month period from December 1 through April 30.

*Expected 25-year, 24-hour runoff shall be determined by using runoff prediction methodologies of the U.S. Soil Conservation Service (or equivalent methodologies).

Manure Application Requirements: Manure must be removed from the manure control system and land applied in accordance with the following requirements:

1. **Solids Settling Facilities:** Collected solids must be removed from the solids settling facilities as necessary to maintain adequate capacity to handle future runoff events. As a minimum, solids shall be removed at least once annually.
2. **Feedlot Runoff Control System:** Accumulated manure shall be removed from the feedlot runoff control system and disposed of by land application following each precipitation or snowmelt runoff event which results in significant manure accumulations in the control system. Manure accumulations will be considered significant whenever the available (unoccupied) storage capacity remaining in the control system is less than 90 percent of that required to store the runoff from the 25-year, 24-hour storm.

Once the available storage capacity remaining in the manure control system is reduced to the point that manure application is necessary, manure application operations must be initiated on the first day that conditions are suitable for land application of manure, and application must continue on subsequent days that suitable conditions exist. Application operations may cease when the storage capacity available in the control system has been restored to greater than 90 percent of that required to store runoff from the 25-year, 24-hour storm.

During application periods, land application shall be conducted at rates sufficient to ensure complete removal of accumulated manure from the control system in ten or fewer application days.

Weather and soil conditions are normally considered suitable for land application of manure if:

- Land application areas are not frozen or snow-covered.
- Temperatures during application are greater than 32 degrees Fahrenheit.
- Precipitation has not exceeded 0.05 inch per day for each of the three days immediately preceding application and no precipitation is occurring on the day of application.

SYSTEM 5: APRIL/MAY AND OCTOBER/NOVEMBER APPLICATION

MAJOR SYSTEM FEATURES:

- Adequate capacity must be provided to collect and store the average runoff expected to occur over the eight-month period from October 1 through May 31 from all feedlot and nonfeedlot areas which drain into the manure control system (additional storage is required if process waters or manure from other sources also drain into the control system).
- Collected manure may be removed from the control system and land applied during any period of the year that conditions are suitable. While application during other periods will minimize the need for application during the April/May and the October/November periods, sufficient manure must still be disposed of during each of these two-month periods to reduce the volume of manure remaining in the control system during these periods to less than 10 percent of the system's design manure storage volume.

DETAILED SYSTEM REQUIREMENTS:

Manure Control System: The manure control system must be constructed to meet or exceed the following requirements:

1. **Solids Settling Facilities:** Manure solids settling facilities which meet or exceed the requirements of subrule 65.2(1) must precede the feedlot runoff control system.
2. **Feedlot Runoff Control System:** The feedlot runoff control system shall, as a minimum, have adequate capacity to store the total wastewater volume determined by summing the following:
 - A. The volume determined by multiplying the unpaved feedlot area which drains into the control system by the appropriate runoff value from Figure 4.
 - B. The volume determined by multiplying the paved feedlot area which drains into the control system by 1.5 times the appropriate runoff value from Figure 4.
 - C. The volume determined by multiplying the total area of cropland, pasture and woodland draining into the control system by the greater of the following:
 - The amount of runoff expected from these areas as a result of the 25-year, 24-hour precipitation event.*
 - The average runoff expected to occur from these areas during the eight-month period from October 1 to May 31.*
 - D. The volume determined by multiplying the total roof, farmstead, and driveway draining into the control system by the average runoff expected to occur from these areas during the eight-month period from October 1 to May 31.*
 - E. The volume of process wastewater which drains into the control system during the eight-month period from October 1 through May 31.
 - F. The volume of manure from other sources which discharges into the control system during the eight-month period from October 1 through May 31.

*Expected 25-year, 24-hour runoff and average runoff for the eight-month period October 1 through May 31 shall be determined using runoff prediction methodologies of the U.S. Soil Conservation Service (or equivalent methodologies).

Manure Application Requirements: Manure must be removed from the manure control system and land applied in accordance with the following requirements:

1. **Solids Settling Facilities:** Collected solids must be removed from the solids settling facilities as necessary to maintain adequate capacity to handle future runoff events. As a minimum, solids shall be removed at least once annually.
2. **Feedlot Runoff Control System:** At a minimum, accumulated manure shall be removed from the feedlot runoff control system and disposed of by land application during the periods April 1 through May 31 and October 1 through November 30.

During each of these periods, land application shall be conducted at rates sufficient to ensure complete removal of accumulated manure from the runoff control system in ten or fewer application days. Manure removal is considered complete when the manure remaining in the runoff control system occupies less than 10 percent of the system's design manure storage capacity.

A feedlot operator may dispose of accumulated manure during any period of the year that conditions are suitable. While application during other periods will minimize the need for application during the April/May and October/November periods, the feedlot operator will still need to dispose of sufficient manure during these periods to reduce the manure volume remaining in the runoff control system during these periods to less than 10 percent of the system's design manure storage capacity.

Land application of manure shall be conducted on days when weather and soil conditions are suitable. Weather and soil conditions are normally considered suitable for manure application if:

- Land application areas are not frozen or snow-covered.
- Temperatures during application are greater than 32 degrees Fahrenheit.
- Precipitation has not exceeded 0.05 inch per day for each of the three days immediately preceding application and no precipitation is occurring on the day of application.

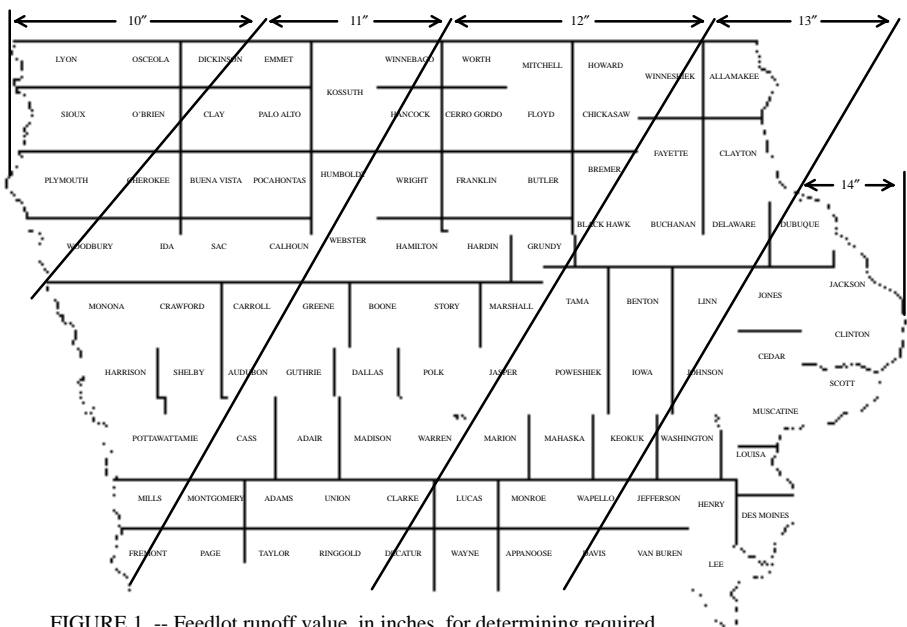


FIGURE 1. -- Feedlot runoff value, in inches, for determining required capacity of the "One Manure Application Per Year" manure control system.

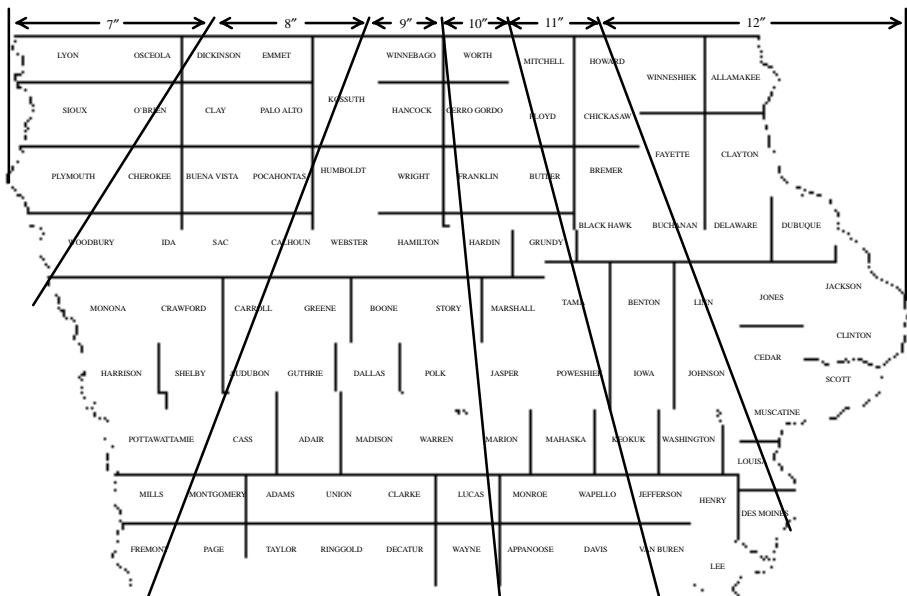


FIGURE 2. -- Feedlot runoff value, in inches, for determining required capacity of the "July and November Manure Application" manure control system.

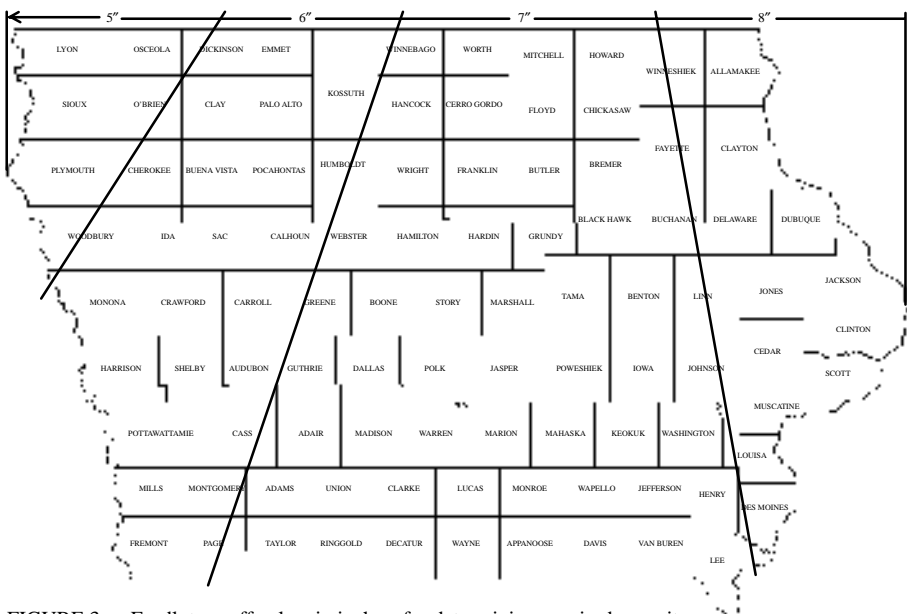


FIGURE 3. -- Feedlot runoff value, in inches, for determining required capacity of the "April, July, and November Manure Application" manure control system.

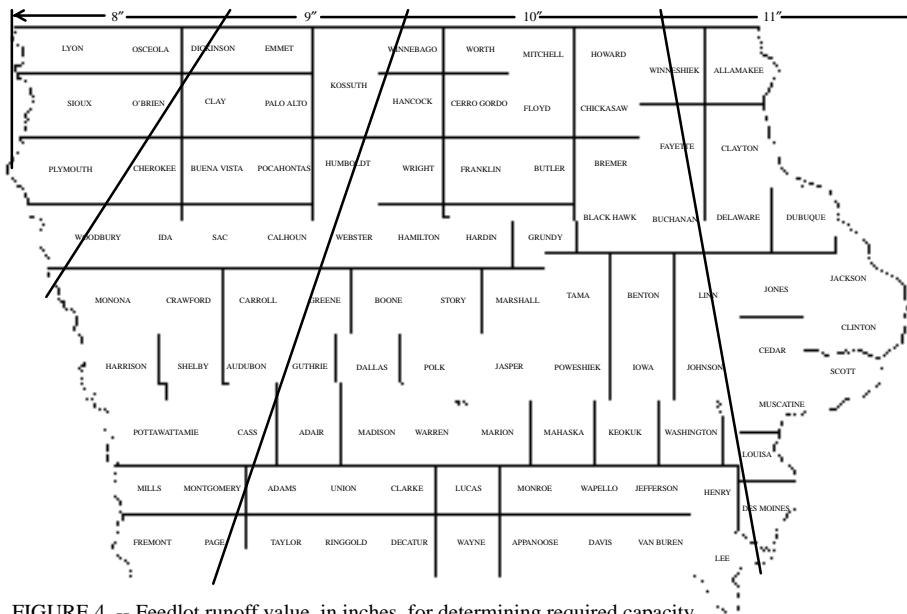


FIGURE 4. -- Feedlot runoff value, in inches, for determining required capacity of the "April/May and October/November Manure Application" manure control system.

APPENDIX B
LAND DISPOSAL OF ANIMAL MANURE
Rescinded IAB 2/14/96, effective 3/20/96

APPENDIX C
MASTER MATRIX

Proposed Site Characteristics

The following scoring criteria apply to the site of the proposed confinement feeding operation. Mark one score under each criterion selected by the applicant. The proposed site must obtain a minimum overall score of 440 and a score of 53.38 in the “air” subcategory, a score of 67.75 in the “water” subcategory and a score of 101.13 in the “community impacts” subcategory.

1. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest:
- * Residence not owned by the owner of the confinement feeding operation,
 - * Hospital,
 - * Nursing home, or
 - * Licensed or registered child care facility.

	Score	Air	Water	Community
250 feet to 500 feet	25	16.25		8.75
501 feet to 750 feet	45	29.25		17.50
751 feet to 1,000 feet	65	42.25		22.75
1,001 feet to 1,250 feet	85	55.25		29.75
1,251 feet or more	100	65.00		35.00

- (A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567—Chapter 65 to determine minimum required separation distances.
- (B) The department will award points only for the single building, of the four listed above, closest to the proposed confinement feeding operation.
- (C) “Licensed or registered child care facility” - a facility licensed or registered by the department of human services providing child care or preschool services for six or more children as provided in Iowa Code chapter 237A.
- (D) A full listing of licensed and registered child care facilities is available at county offices of the department of human services.

2. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest public use area.

	Score	Air	Water	Community
250 feet to 500 feet	5	2.00		3.00
501 feet to 750 feet	10	4.00		6.00
751 feet to 1,000 feet	15	6.00		9.00
1,001 feet to 1,250 feet	20	8.00		12.00
1,251 feet to 1,500 feet	25	10.00		15.00
1,501 feet or more	30	12.00		18.00

- (A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567—Chapter 65 to determine minimum required separation distances.
- (B) “Public use area” - a portion of land owned by the United States, the state, or a political subdivision with facilities which attract the public to congregate and remain in the area for significant periods of time. Facilities include, but are not limited to, picnic grounds, campgrounds, cemeteries, lodges, shelter houses, playground equipment, lakes as listed in Table 2 of 567—Chapter 65, and swimming beaches. It does not include a highway, road right-of-way, parking areas, recreational trails or other areas where the public passes through, but does not congregate or remain in the area for significant periods of time.

3. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest:
- * Educational institution,
 - * Religious institution, or
 - * Commercial enterprise.

	Score	Air	Water	Community
250 feet to 500 feet	5	2.00		3.00
501 feet to 750 feet	10	4.00		6.00
751 feet to 1,000 feet	15	6.00		9.00
1,001 feet to 1,250 feet	20	8.00		12.00
1,251 feet to 1,500 feet	25	10.00		15.00
1,501 feet or more	30	12.00		18.00

- (A) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567—Chapter 65 to determine minimum required separation distances.
- (B) The department will award points only for the single building, of the three listed above, closest to the proposed confinement feeding operation.
- (C) “Educational institution” - a building in which an organized course of study or training is offered to students enrolled in kindergarten through grade 12 and served by local school districts, accredited or approved nonpublic schools, area education agencies, community colleges, institutions of higher education under the control of the state board of regents, and accredited independent colleges and universities.
- (D) “Religious institution” - a building in which an active congregation is devoted to worship.
- (E) “Commercial enterprise” - a building which is used as a part of a business that manufactures goods, delivers services, or sells goods or services, which is customarily and regularly used by the general public during the entire calendar year and which is connected to electric, water, and sewer systems. A commercial enterprise does not include a farm operation.

4. Additional separation distance, above the minimum requirement of 500 feet, from proposed confinement structure to the closest water source.

	Score	Air	Water	Community
250 feet to 500 feet	5		5.00	
501 feet to 750 feet	10		10.00	
751 feet to 1,000 feet	15		15.00	
1,001 feet to 1,250 feet	20		20.00	
1,251 feet to 1,500 feet	25		25.00	
1,501 feet or more	30		30.00	

“Water source” - a lake, river, reservoir, creek, stream, ditch, or other body of water or channel having definite banks and a bed with water flow, except lakes or ponds without an outlet to which only one landowner is riparian.

5. Separation distance of 300 feet or more from the proposed confinement structure to the nearest thoroughfare.

	Score	Air	Water	Community
300 feet or more	30	9.00		21.00

- (A) “Thoroughfare” - a road, street, bridge, or highway open to the public and constructed or maintained by the state or a political subdivision.
(B) The 300-foot distance includes the 100-foot minimum setback plus an additional 200 feet.

6. Additional separation distance, above minimum requirements, from proposed confinement structure to the closest critical public area.

	Score	Air	Water	Community
500 feet or more	10	4.00		6.00

- (A) All critical public areas as defined in 567—65.1(455B) are public use areas and therefore subject to public use area minimum separation distances.
(B) Refer to the construction permit application package to determine the animal unit capacity (or animal weight capacity if an expansion) of the proposed confinement feeding operation. Then refer to Table 6 of 567—Chapter 65 to determine minimum required separation distances.

7. Proposed confinement structure is at least two times the minimum required separation distance from all private and public water wells.

	Score	Air	Water	Community
Two times the minimum separation distance	30		24.00	6.00

Refer to Table 6 of 567—Chapter 65 for minimum required separation distances to wells.

8. Additional separation distance, above the minimum requirement of 1,000 feet, from proposed confinement structure to the closest:
- * Agricultural drainage well,
 - * Known sinkhole, or
 - * Major water source.

	Score	Air	Water	Community
250 feet to 500 feet	5	0.50	2.50	2.00
501 feet to 750 feet	10	1.00	5.00	4.00
751 feet to 1,000 feet	15	1.50	7.50	6.00
1,001 feet to 1,250 feet	20	2.00	10.00	8.00
1,251 feet to 1,500 feet	25	2.50	12.50	10.00
1,501 feet to 1,750 feet	30	3.00	15.00	12.00
1,751 feet to 2,000 feet	35	3.50	17.50	14.00
2,001 feet to 2,250 feet	40	4.00	20.00	16.00
2,251 feet to 2,500 feet	45	4.50	22.50	18.00
2,501 feet or more	50	5.00	25.00	20.00

- (A) The department will award points only for the single item, of the three listed above, closest to the proposed confinement feeding operation.
- (B) “Agricultural drainage wells” - include surface intakes, cisterns and wellheads of agricultural drainage wells.
- (C) “Major water source” - a lake, reservoir, river or stream located within the territorial limits of the state, or any marginal river area adjacent to the state which can support a floating vessel capable of carrying one or more persons during a total of a six-month period in one out of ten years, excluding periods of flooding. Major water sources in the state are listed in Tables 1 and 2 in 567—Chapter 65.

9. Distance between the proposed confinement structure and the nearest confinement facility that has a submitted department manure management plan.

	Score	Air	Water	Community
Three-quarters of a mile or more (3,960 feet)	25	7.50	7.50	10.00

Confinement facilities include swine, poultry, and dairy and beef cattle.

10. Separation distance from proposed confinement structure to closest:
- * High quality (HQ) waters,
 - * High quality resource (HQR) waters, or
 - * Protected water areas (PWA)
- is at least two times the minimum required separation distance.

	Score	Air	Water	Community
Two times the minimum separation distance	30		22.50	7.50

- (A) The department will award points only for the single item, of the three listed above, closest to the proposed confinement feeding operation.
- (B) HQ waters are identified in 567—Chapter 61.
- (C) HQR waters are identified in 567—Chapter 61.
- (D) A listing of PWAs is available at <http://www.state.ia.us/government/dnr/organiza/ppd/prowater.htm#Location%20of%20PWA's%20in>.

11. Air quality modeling results demonstrating an annoyance level less than 2 percent of the time for residences within two times the minimum separation distance.

	Score	Air	Water	Community
University of Minnesota OFFSET model results demonstrating an annoyance level less than 2 percent of the time	10	6.00		4.00

- (A) OFFSET can be found at <http://www.extension.umn.edu/distribution/livestocksystems/DI7680.html>. For more information, contact Dr. Larry Jacobson, University of Minnesota, (612)625-8288, jacob007@tc.umn.edu.
(B) A residence that has a signed waiver for the minimum separation distance cannot be included in the model.
(C) Only the OFFSET model is acceptable until the department recognizes other air quality models.
-

12. Liquid manure storage structure is covered.

	Score	Air	Water	Community
Covered liquid manure storage	30	27.00		3.00

- (A) “Covered” - organic or inorganic material, placed upon an animal feeding operation structure used to store manure, which significantly reduces the exchange of gases between the stored manure and the outside air. Organic materials include, but are not limited to, a layer of chopped straw, other crop residue, or a naturally occurring crust on the surface of the stored manure. Inorganic materials include, but are not limited to, wood, steel, aluminum, rubber, plastic, or Styrofoam. The materials shall shield at least 90 percent of the surface area of the stored manure from the outside air. Cover shall include an organic or inorganic material which current scientific research shows reduces detectable odor by at least 75 percent. A formed manure storage structure directly beneath a floor where animals are housed in a confinement feeding operation is deemed to be covered.
(B) The design, operation and maintenance plan for the manure cover must be in the construction permit application and made a condition in the approved construction permit.
-

13. Construction permit application contains design, construction, operation and maintenance plan for emergency containment area at manure storage structure pump-out area.

	Score	Air	Water	Community
Emergency containment area	20		18.00	2.00

- (A) The emergency containment area must be able to contain at least 5 percent of the total volume capacity of the manure storage structure.
(B) The emergency containment area must be constructed on soils that are fine-grained and have low permeability.
(C) If manure is spilled into the emergency containment area, the spill must be reported to the department within six hours of onset or discovery.
(D) The design, construction, operation and maintenance plan for the emergency containment area must be in the construction permit application and made a condition in the approved construction permit.
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14. Installation of a filter(s) designed to reduce odors from confinement building(s) exhaust fan(s).

	Score	Air	Water	Community
Installation of filter(s)	10	8.00		2.00

The design, operation and maintenance plan for the filter(s) must be in the construction permit application and made a condition in the approved construction permit.

15. Utilization of landscaping around confinement structure.

	Score	Air	Water	Community
Utilization of landscaping	20	10.00		10.00

The design, operation and maintenance plan for the landscaping must be in the construction permit application and made a condition in the approved construction permit. The design should contain at least three rows of trees and shrubs, of both fast- and slow-growing species that are well suited for the site.

16. Enhancement, above minimum requirements, of structures used in stockpiling and composting activities, such as an impermeable pad and a roof or cover.

	Score	Air	Water	Community
Stockpile and compost facility enhancements	30	9.00	18.00	3.00

(A) The design, operation and maintenance plan for the stockpile or compost structure enhancements must be in the construction permit application and made a condition in the approved construction permit.

(B) The stockpile or compost structures must be located on land adjacent or contiguous to the confinement building.

17. Proposed manure storage structure is formed.

	Score	Air	Water	Community
Formed manure storage structure	30		27.00	3.00

(A) "Formed manure storage structure" - a covered or uncovered impoundment used to store manure from an animal feeding operation, which has walls and a floor constructed of concrete, concrete block, wood, steel, or similar materials. Similar materials may include, but are not limited to, plastic, rubber, fiberglass, or other synthetic materials. Materials used in a formed manure storage structure shall have the structural integrity to withstand expected internal and external load pressures.

(B) The design, operation and maintenance plan for the formed manure storage structure must be in the construction permit application and made a condition in the approved construction permit.

18. Manure storage structure is aerated to meet departmental standards as an aerobic structure, if aeration is not already required by the department.

	Score	Air	Water	Community
Aerated manure storage structure	10	8.00		2.00

(A) "Aerobic structure" - an animal feeding operation structure other than an egg washwater storage structure which relies on aerobic bacterial action which is maintained by the utilization of air or oxygen and which includes aeration equipment to digest organic matter. Aeration equipment shall be used and shall be capable of providing oxygen at a rate sufficient to maintain an average of 2 milligrams per liter dissolved oxygen concentration in the upper 30 percent of the depth of manure in the structure at all times.

(B) The design, operation and maintenance plan for the aeration equipment must be in the construction permit application and made a condition in the approved construction permit.

19. Proposed confinement site has a suitable truck turnaround area so that semitrailers do not have to back into the facility from the road.

	Score	Air	Water	Community
Truck turnaround	20			20.00

(A) The design, operation and maintenance plan for the truck turnaround area must be in the construction permit application and made a condition in the approved construction permit.

(B) The turnaround area should be at least 120 feet in diameter and be adequately surfaced for traffic in inclement weather.

20. Construction permit applicant's animal feeding operation environmental and worker protection violation history for the last five years at all facilities in which the applicant has an interest.

	Score	Air	Water	Community
No history of Administrative Orders in last five years	30			30.00

(A) "Interest" - ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

(B) An environmental violation is a final Administrative Order (AO) from the department or final court ruling against the construction permit applicant for environmental violations related to an animal feeding operation. A Notice of Violation (NOV) does not constitute a violation.

21. Construction permit applicant waives the right to claim a Pollution Control Tax Exemption for the life of the proposed confinement feeding operation structure.

	Score	Air	Water	Community
Permanent waiver of Pollution Control Tax Exemption	5			5.00

(A) Waiver of Pollution Control Tax Exemption is limited to the proposed structure(s) in the construction permit application.

(B) The department and county assessor will maintain a record of this waiver, and it must be in the construction permit application and made a condition in the approved construction permit.

22. Construction permit applicant can lawfully claim a Homestead Tax Exemption on the site where the proposed confinement structure is to be constructed
- OR -
- the construction permit applicant is the closest resident to the proposed confinement structure.

	Score	Air	Water	Community
Site qualifies for Homestead Tax Exemption or permit applicant is closest resident to proposed structure	25			25.00

- (A) Proof of Homestead Tax Exemption is required as part of the construction permit application.
- (B) Applicant includes persons who have ownership interests. "Interest" - ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

-
23. Construction permit applicant can lawfully claim a Family Farm Tax Credit for agricultural land where the proposed confinement feeding operation is to be located pursuant to Iowa Code chapter 425A.

	Score	Air	Water	Community
Family Farm Tax Credit qualification	25			25.00

Applicant includes persons who have ownership interests. "Interest" - ownership of a confinement feeding operation as a sole proprietor or a 10 percent or more ownership interest held by a person in a confinement feeding operation as a joint tenant, tenant in common, shareholder, partner, member, beneficiary or other equity interest holder. Ownership interest is an interest when it is held either directly, indirectly through a spouse or dependent child, or both.

-
24. Facility size.

	Score	Air	Water	Community
1 to 2,000 animal unit capacity	20			20.00
2,001 to 3,000 animal unit capacity	10			10.00
3,001 animal unit capacity or more	0			0.00

- (A) Refer to the construction permit application package to determine the animal unit capacity of the proposed confinement structure at the completion of construction.
- (B) If the proposed structure is part of an expansion, animal unit capacity (or animal weight capacity) must include all animals confined in adjacent confinement structures.
- (C) Two or more animal feeding operations under common ownership or management are deemed to be a single animal feeding operation if they are adjacent or utilize a common area or system for manure disposal. In addition, for purposes of determining whether two or more confinement feeding operations are adjacent, all of the following must apply:
- (a) At least one confinement feeding operation structure must be constructed on and after May 21, 1998.
 - (b) A confinement feeding operation structure which is part of one confinement feeding operation is separated by less than a minimum required distance from a confinement feeding operation structure which is part of the other confinement feeding operation. The minimum required distance shall be as follows:
 - (1) 1,250 feet for confinement feeding operations having a combined animal unit capacity of less than 1,000 animal units.
 - (2) 2,500 feet for confinement feeding operations having a combined animal unit capacity of 1,000 animal units or more.

25. Construction permit application includes livestock feeding and watering systems that significantly reduce manure volume.

	Score	Air	Water	Community
Wet/dry feeders or other feeding and watering systems that significantly reduce manure volume	25		12.50	12.50

The design, operation and maintenance plan for the feeding system must be in the construction permit application and made a condition in the approved construction permit.

Proposed Site Operation and Manure Management Practices

The following scoring criteria apply to the operation and manure management characteristics of the proposed confinement feeding operation. Mark one score under each criterion that best reflects the characteristics of the submitted manure management plan.

26. Liquid or dry manure (choose only one subsection from subsections “a” - “e” and mark only one score in that subsection).

	Score	Air	Water	Community
a. Bulk dry manure is sold under Iowa Code chapter 200A and surface-applied	15		15.00	
Bulk dry manure is sold under Iowa Code chapter 200A and incorporated on the same date it is land-applied	30	12.00	12.00	6.00
b. Dry manure is composted and land-applied under the requirements of a manure management plan	10	4.00	4.00	2.00
Dry manure is composted and sold so that no manure is applied under the requirements of a manure management plan	30	12.00	12.00	6.00

c.	Methane digester is used to generate energy from manure and remaining manure is surface-applied under the requirements of a manure management plan	10	3.00	3.00	4.00
	After methane digestion is complete, manure is injected or incorporated on the same date it is land-applied under the requirements of a manure management plan	30	12.00	12.00	6.00
d.	Dry manure is completely burned to generate energy and no remaining manure is applied under the requirements of a manure management plan	30	9.00	9.00	12.00
	Some dry manure is burned to generate energy, but remaining manure is land-applied and incorporated on the same date it is land-applied	30	12.00	12.00	6.00
e.	Injection or incorporation of manure on the same date it is land-applied	30	12.00	12.00	6.00

- (A) Choose only ONE line from subsection “a,” “b,” “c,” “d,” or “e” above and mark only one score in that subsection.
- (B) The injection or incorporation of manure must be in the construction permit application and made a condition in the approved construction permit.
- (C) If an emergency arises and injection or incorporation is not feasible, prior to land application of manure, the applicant must receive a written approval for an emergency waiver from a department field office to surface-apply manure.
- (D) Requirements pertaining to the sale of bulk dry manure pursuant to Iowa Code chapter 200A must be incorporated into the construction permit application and made a condition of the approved construction permit.
- (E) The design, operation and maintenance plan for utilization of manure as an energy source must be in the construction permit application and made a condition in the approved construction permit.
- (F) The design, operation and maintenance plan for composting facilities must be in the construction permit application and made a condition in the approved construction permit.

27. Land application of manure is based on a two-year crop rotation phosphorus uptake level.

	Score	Air	Water	Community
Two-year phosphorus crop uptake application rate	10		10.00	

- (A) Land application of manure cannot exceed phosphorus crop usage levels for a two-year crop rotation cycle.
- (B) The phosphorus uptake application rates must be in the construction permit application and made a condition in the approved construction permit.

28. Land application of manure to farmland that has USDA Natural Resources Conservation Service (NRCS)-approved buffer strips contiguous to all water sources traversing or adjacent to the fields listed in the manure management plan.

	Score	Air	Water	Community
Manure application on farmland with buffer strips	10		8.00	2.00

- (A) The department may request NRCS maintenance agreements to ensure proper design, installation and maintenance of filter strips. If a filter strip is present but not designed by NRCS, it must meet NRCS standard specifications.
- (B) The application field does not need to be owned by the confinement facility owner to receive points.
- (C) On current and future manure management plans, the requirement for buffer strips on all land application areas must be in the construction permit application and made a condition in the approved construction permit.

29. Land application of manure does not occur on highly erodible land (HEL), as classified by the USDA NRCS.

	Score	Air	Water	Community
No manure application on HEL farmland	10		10.00	

Manure application on non-HEL farmland must be in the construction permit application and made a condition in the approved construction permit.

30. Additional separation distance, above minimum requirements (0 or 750 feet, see below), for the land application of manure to the closest:

- * Residence not owned by the owner of the confinement feeding operation,
- * Hospital,
- * Nursing home, or
- * Licensed or registered child care facility.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	3.25		1.75
Additional separation distance of 500 feet	10	6.50		3.50

- (A) The department will award points only for the single building, of the four listed above, closest to the proposed confinement feeding operation.
- (B) Minimum separation distance for land application of manure injected or incorporated on the same date as application: 0 feet.
- (C) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
- (D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.
- (E) “Licensed or registered child care facility” - a facility licensed or registered by the department of human services providing child care or preschool services for six or more children as provided in Iowa Code chapter 237A.
- (F) A full listing of licensed and registered child care facilities is available at county offices of the department of human services.

31. Additional separation distance, above minimum requirements (0 or 750 feet, see below), for land application of manure to closest public use area.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	2.00		3.00

- (A) “Public use area” - a portion of land owned by the United States, the state, or a political subdivision with facilities which attract the public to congregate and remain in the area for significant periods of time. Facilities include, but are not limited to, picnic grounds, campgrounds, cemeteries, lodges, shelter houses, playground equipment, lakes as listed in Table 2 in 567—Chapter 65, and swimming beaches. It does not include a highway, road right-of-way, parking areas, recreational trails or other areas where the public passes through, but does not congregate or remain in the area for significant periods of time.
- (B) Minimum separation distance for land application of manure injected or incorporated on the same date as application: 0 feet.
- (C) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
- (D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.

32. Additional separation distance, above minimum requirements (0 or 750 feet, see below), for the land application of manure to the closest:
- * Educational institution,
 - * Religious institution, or
 - * Commercial enterprise.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	2.00		3.00

- (A) Minimum separation distance for land application of manure broadcast on soil surface: 750 feet.
- (B) Minimum separation distance for land application of manure injected or incorporated on same date as application: 0 feet.
- (C) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.
- (D) “Educational institution” - a building in which an organized course of study or training is offered to students enrolled in kindergarten through grade 12 and served by local school districts, accredited or approved nonpublic schools, area education agencies, community colleges, institutions of higher education under the control of the state board of regents, and accredited independent colleges and universities.
- (E) “Religious institution” - a building in which an active congregation is devoted to worship.
- (F) “Commercial enterprise” - a building which is used as a part of a business that manufactures goods, delivers services, or sells goods or services, which is customarily and regularly used by the general public during the entire calendar year and which is connected to electric, water, and sewer systems. A commercial enterprise does not include a farm operation.

33. Additional separation distance of 50 feet, above minimum requirements (0 or 200 feet, see below), for the land application of manure to the closest private drinking water well or public drinking water well
- OR -
- well is properly closed under supervision of county health officials.

	Score	Air	Water	Community
Additional separation distance of 50 feet or well is properly closed	10		8.00	2.00

- (A) Minimum separation distance for land application of manure injected or incorporated on the same date as application or 50-foot vegetation buffer exists around well and manure is not applied to the buffer: 0 feet.
- (B) Minimum separation distance for land application of manure broadcast on soil surface: 200 feet.
- (C) If applicant chooses to close the well, the well closure must be incorporated into the construction permit application and made a condition in the approved construction permit.

34. Additional separation distance, above minimum requirements, for the land application of manure to the closest:
- * Agricultural drainage well,
 - * Known sinkhole,
 - * Major water source, or
 - * Water source.

	Score	Air	Water	Community
Additional separation distance of 200 feet	5	0.50	2.50	2.00
Additional separation distance of 400 feet	10	1.00	5.00	4.00

- (A) “Agricultural drainage wells” - include surface intakes, cisterns and wellheads of agricultural drainage wells.
- (B) “Major water source” - a lake, reservoir, river or stream located within the territorial limits of the state, or any marginal river area adjacent to the state, which can support a floating vessel capable of carrying one or more persons during a total of a six-month period in one out of ten years, excluding periods of flooding. Major water sources in the state are listed in Tables 1 and 2 in 567—Chapter 65.
- (C) “Water source” - a lake, river, reservoir, creek, stream, ditch, or other body of water or channel having definite banks and a bed with water flow, except lakes or ponds without an outlet to which only one landowner is riparian.
- (D) The additional separation distances must be in the construction permit application and made a condition in the approved construction permit.

35. Additional separation distance, above minimum requirements, for the land application of manure, to the closest:
- * High quality (HQ) water,
 - * High quality resource (HQR) water, or
 - * Protected water area (PWA).

	Score	Air	Water	Community
Additional separation distance of 200 feet	5		3.75	1.25
Additional separation distance of 400 feet	10		7.50	2.50

- (A) HQ waters are identified in 567—Chapter 61.
- (B) HQR waters are identified in 567—Chapter 61.
- (C) A listing of PWAs is available at <http://www.state.ia.us/government/dnr/organiza/ppd/prowater.htm#Location%20of%20PWA's%20in>.

36. Demonstrated community support.

	Score	Air	Water	Community
Written approval of 100 percent of the property owners within a one-mile radius	20			20.00

37. Worker safety and protection plan is submitted with the construction permit application.

	Score	Air	Water	Community
Submission of worker safety and protection plan	10			10.00

(A) The worker safety and protection plan must be in the construction permit application and made a condition in the approved construction permit.

(B) The worker safety and protection plan and subsequent records must be kept on site with the manure management plan records.

38. Applicant signs a waiver of confidentiality allowing the public to view confidential manure management plan land application records.

	Score	Air	Water	Community
Manure management plan confidentiality waiver	5			5.00

The waiver of confidentiality must be in the construction permit application and made a condition in the approved construction permit. The applicant may limit public inspection to reasonable times and places.

39. Added economic value based on quality job development (number of full-time equivalent (FTE) positions), and salary equal to or above Iowa department of workforce development median (45-2093)

- OR -

the proposed structure increases commercial property tax base in the county.

	Score	Air	Water	Community
Economic value to local community	10			10.00

The Iowa department of workforce development regional profiles are available at <http://www.iowaworkforce.org/centers/regionalsites.htm>. Select the appropriate region and then select "Regional Profile."

40. Construction permit application contains an emergency action plan.

	Score	Air	Water	Community
Emergency action plan	5		2.50	2.50

(A) Iowa State University Extension publication PM 1859 lists the components of an emergency action plan. The emergency action plan submitted should parallel the components listed in the publication.

(B) The posting and implementation of an emergency action plan must be in the construction permit application and made a condition in the approved construction permit.

(C) The emergency action plan and subsequent records must be kept on site with the manure management plan records.

41. Construction permit application contains a closure plan.

	Score	Air	Water	Community
Closure plan	5		2.50	2.50

- (A) The closure plan must be in the construction permit application and made a condition in the approved construction permit.
- (B) The closure plan must be kept on site with the manure management plan records.

42. Adoption and implementation of an environmental management system (EMS) recognized by the department.

	Score	Air	Water	Community
EMS	15	4.50	4.50	6.00

- (A) The EMS must be in the construction permit application and made a condition in the approved construction permit.
- (B) The EMS must be recognized by the department as an acceptable EMS for use with confinement operations.

43. Adoption and implementation of NRCS-approved Comprehensive Nutrient Management Plan (CNMP).

	Score	Air	Water	Community
CNMP	10	3.00	3.00	4.00

The implementation and continuation of a CNMP must be in the construction permit application and made a condition in the approved construction permit.

44. Groundwater monitoring wells installed near manure storage structure, and applicant agrees to provide data to the department.

	Score	Air	Water	Community
Groundwater monitoring	15		10.50	4.50

- (A) Monitoring well location, sampling and data submission must meet department requirements.
- (B) The design, operation and maintenance plan for the groundwater monitoring wells, and data transfer to the department, must be in the construction permit application and made a condition in the approved construction permit.

Minimum score to pass:

Total Score	Air	Water	Community
440	53.38	67.75	101.13

TABLE 1
Major Water Sources—Rivers and Streams

County	River/Stream	Location
Adair	Middle Nodaway River	Adams/Adair Line to Hwy. 92
	Middle River	All
	West Fork-Middle Nodaway	Mouth to County Road N51
Adams	East Nodaway River	Adams/Taylor Line to County Road H24
	Middle Nodaway River	All
Allamakee	Bear Creek	Mouth, S1, T99N, R6W to West Line S30, T100N, R6W
	Mississippi River	All
	Paint Creek	Mouth to road crossing in S18, T97N, R4W
	Upper Iowa River	Mouth, S36, T100N, R4W to West Line S31, T100N, R6W
	Village Creek	Mouth, S33, T99N, R3W, upstream to Confluence with Unnamed Creek in S23, T98N, R4W
	Waterloo Creek	Mouth, S35, T100N, R6W to North Line S8, T100N, R6W
	Yellow River	Mouth, S34, T96N, R3W to Confluence with Upper Branch Yellow River, S4, T96N, R6W
Appanoose	Chariton River	Missouri Line to Rathbun Dam
	South Chariton River	Appanoose/Wayne Line to Rathbun Lake
Benton	Bear Creek	North County Line to Mouth at Cedar River, S21, T86N, R10W
	Cedar River	All
	Iowa River	All
	Opossum Creek	SE ¼ S5, T84N, R9W to East County Line
	Prairie Creek 2	Road Crossing N ½ S24, T83N, R12W to Benton/Linn Line
	Wolf Creek	All